



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Breynaert EXAMINER: Cuevas, P.
SERIAL NO.: 09/601,545 GROUP ART UNIT: 2834
FILED: March 29, 2001
FOR: NOISE SUPPRESSION SYSTEM FOR A PERMANENT-MAGNET
MOTOR FOR ACTIVATING A FUNCTIONAL DEVICE IN A MOTOR
VEHICLE

Box AF
Assistant Commissioner of Patents & Trademarks
Washington, D.C. 20231

SUPPLEMENTAL APPEAL BRIEF

Dear Sir:

Responsive to the Final Office Action dated December 20, 2002 (Paper No. 22) reopening prosecution, Appellant hereby reinstates this appeal and presents this Supplemental Appeal Brief. Enclosed is a check for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

REAL PARTY IN INTEREST

The real party in interest is Meritor Light Vehicle Systems - France, the assignee of the entire right and interest in this Application. This assignment is recorded at Reel 011617, Frame 0267.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences of which Appellant is aware.

STATUS OF CLAIMS

Claims 1, 4 and 6-10 stand finally rejected under 35 U.S.C. § 103(a).
Claims 2 and 3 stand finally rejected under 35 U.S.C. § 103(a).
Claim 11 stands finally rejected under 35 U.S.C. § 103(a).

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STATUS OF AMENDMENTS

All previous amendments, including the proposed after final amendment dated July 19, 2002, have been entered. Claims 1-4 and 6-11 in their current form are attached as Appendix A.

SUMMARY OF THE INVENTION

The present invention relates to a noise suppression system for a permanent-magnet motor that activates a functional device in a motor vehicle.

Figure 1 shows the general structure of a permanent-magnet motor 1 for activating, for example, a functional device in a motor vehicle. This motor 1 has a metal casing 2 in which permanent magnets 3 and a rotating part 4 are placed. The rotating part 4 is provided with a shaft 5 on which a commutator 6 and other conventional devices 7 are placed. The commutator 6 is associated with supply brushes 8 and 9, which are connected by supply leads 10 and 11 to a power supply external to the motor 12 (p. 2, para. 9-11).

According to the invention, each supply brush 8 and 9 is connected to the metal casing 2 of the motor 1 through at least one noise suppression capacitor 13 and 14. The metal casing 2 of the motor is connected to the vehicle's earth at 15 in any suitable manner (p. 2, para. 12). This makes it possible to form two LC noise suppression circuits for the brushes by using the intrinsic inductance of the leads 10 and 11. These leads may also be associated with specific inductors 16 and 17 or they may consist of conventional ferrite-loaded wires. The ferrite-loaded wires may include a conductive core of wires placed in a ferrite sheath that is itself surrounded by a layer of insulating material. This type of structure makes it possible to match the characteristics of the LC circuits to the desired noise suppression characteristics (p. 3, para. 13-15).

The metal casing 2 of the motor may, as described above, be connected to the vehicle's earth in any suitable manner, such as through an earthing braid or a supporting piece of the functional device with which the motor is associated. For example, the metal casing of the motor may be earthed by a device that fastens the motor to the rest of the functional device. In another example, if the activating motor is a motor for activating a motor-operated adjustable vehicle seat, the metal casing of the motor may be connected to the vehicle's earth through the slideway of the seat or other device (p. 3, para. 16-19).

ISSUES

1. Is the final rejection of claims 1, 4 and 6-10 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,321,321 to Takiguchi ("Takiguchi") in view of U.S. Patent No. 5,717,270 to Lau et al. ("Lau") improper?
2. Is the final rejection of claims 2 and 3 under 35 U.S.C. § 103(a) as being unpatentable over Takiguchi in view of U.S. Patent No. 5,949,173 to Wille et al. ("Wille") improper?
3. Is the final rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Takiguchi in view of Lau and further in view of Wille improper?

GROUPING OF CLAIMS

Claims 1, 2, 3, and 4 each stand or fall alone. Claims 6 and 7 stand or fall together. Claims 8, 9, 10, and 11 each stand or fall alone.

ARGUMENTS

1. The final rejection of claims 1, 4 and 6-10 under 35 U.S.C. § 103(a) as being unpatentable over Takiguchi ("Takiguchi") in view of Lau is improper.

In the Final Office Action, the Examiner asserted that Takiguchi shows a metal casing that is connected to the vehicle's earth (p. 4). Appellant respectfully disagrees with respect to all the rejected claims.

A. Claim 1

With respect to claim 1, Takiguchi clearly states that its casing 5 is made of an insulative material (col. 3, lines 61-62), not a metal. As is known in the art, metals generally are considered conductive materials, not insulative materials. As also known in the art, insulative materials do not need to be earthed because they do not conduct electricity. Thus, the insulative casing 5 in Takiguchi does not suggest the claimed metal casing due the disparate properties between insulative materials and conductive metals. Takiguchi also fails to contain any discussion or disclosure of the claimed complementary means for earthing the casing.

Appellants respectfully note that the "complementary means (100, added by the examiner) for earthing the casing" shown in the Final Office Action still does not suggest the claimed invention. As noted above, it is known that insulating materials do not need to be earthed. To establish a prima facie case of obviousness, "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." MPEP § 2142. The Examiner has not fulfilled this burden. The Examiner cannot simply attach a label to an unlabelled element (in this case, reference numeral 100) in the Takiguchi reference and assert that it corresponds to the claimed complementary means without any supporting description in the Takiguchi reference itself. Based on what little is disclosed in Takiguchi (i.e., Figure 3 only, with no corresponding description in the specification for the part labeled 100 by the Examiner), reference numeral 100 simply corresponds to the support structure on which the motor 1 is mounted and not a structure that earths the casing.

In fact, Takiguchi only teaches using an insulative casing which, as is known in the art, virtually excludes metal materials. From the explicit teachings of Takiguchi, one of ordinary skill in the art would have actually been led away from the claimed metal casing and would not have even considered including the claimed complementary means for earthing the casing, knowing that insulative materials do not need to be earthed.

The Examiner admitted that Takiguchi does not show brushes that are separately connected to the casing by at least one noise suppression capacitor, but asserted that it would have been obvious "to use the separately connected noise suppression capacitors, brushes and shaft disclosed by Lau et al., on the noise suppression system disclosed by Takiguchi for the purposes of maintaining a minimum length of the commutator/rotor" (p. 4). Appellant respectfully disagrees.

Combining Takiguchi with Lau still would not suggest the claimed because Lau does not overcome the deficiencies noted above in Takiguchi. Lau does not even show a casing, much less a metal casing that is earthed. In fact, the Examiner admitted that Lau does not show any structure for grounding a casing and simply stated that Lau shows "said casing being grounded (100, added by the examiner) via connection to a vehicle function device" (p. 4, emphasis added). In other words, the Examiner added the earthing/grounding structure to the Takiguchi/Lau combination on his own to support the rejection because neither Takiguchi nor Lau showed such a structure, in essence taking official notice that the earthing structure would have been obvious.

The Examiner is only permitted, however, to take official notice of facts outside of the record if they are "capable of instant and unquestionable demonstration as being 'well-known' in the art." MPEP § 2144.03. The Examiner has not demonstrated this. An insulative casing, which is the only casing suggested by the Takiguchi/Lau combination, does not instantly suggest a metal casing that is earthed, particularly when insulated materials do not even require earthing.

Further, as noted in Appellant's previous Appeal Brief, Lau does not suggest capacitors 44 that separately connect each brush to a casing. Lau explicitly states that the brushes (not shown) contact a sliding portion 37 of the commutator segments 32 (col. 3, lines 14-17). The capacitor 44 contacts the commutator at a U-shaped terminal portion 39, which is in a completely different area than the sliding portion 37. Nothing in Lau even remotely suggests connecting the brushes to the capacitors 44 in any way, much less suggest connecting the brushes to a metal casing through the capacitors.

Even if Lau did teach separately connecting each brush to a motor casing through a capacitor (which it clearly does not), there is no motivation or suggestion to modify Takiguchi with Lau in this manner. Figures 10a and 10b of Takiguchi shows a capacitor 9 that is connected in parallel with the motor M. Thus, at best, Takiguchi suggests connecting one capacitor to both brushes in the motor, not connecting each brush separately to a capacitor like the claimed invention. The operation of the noise suppression circuit in Takiguchi requires series connection of the choke coils 6, 7 and parallel connection of the single capacitor 8 with the motor to work properly and allow selection and removal of the choke coils 6, 7 and capacitor 8 from the circuit as needed without changing the structure of the circuit itself (see, e.g., Figures 8 through 10; col. 5, lines 43-65). One of ordinary skill in the art would have not been led to connect each brush in Takiguchi separately to a casing through a capacitor, because doing so would lock the circuit to a single circuit structure and prevent the selection and removal of the coils and capacitor at will, directly contrary to the teachings of Takiguchi (col. 2, lines 50-54).

To obtain the claimed invention from the suggested combination, one of ordinary skill in the art would have to (1) combine Takiguchi and Lau in the first place even though they have conflicting teachings regarding the location and connection of the brushes and capacitors; (2) decide to use a metal casing instead of the insulative casing taught by the combination; (3) add a complementary means to the metal casing and a functional device to connect the metal casing to earth absent any teaching of an

earthing structure in the combination; (4) connect the capacitors shown in Lau to the brushes, absent any suggestion to do so; and (5) connect those capacitors to the metal casing instead of to only the motor as shown in Takiguchi, absent any suggestion to do so. This requires far too many inferential leaps from the limited teachings of the Takiguchi/Lau combination to support an obviousness rejection. Thus, the final rejection of claim 1 under 35 U.S.C. 103(a) is improper and should be withdrawn.

B. Claim 4

For the reasons discussed above with respect to claim 1, the final rejection of claim 4 is improper. Claim 4 recites that means for earthing the motor casing comprises means for fastening this motor to the functional device. As explained above, nothing in the cited art even suggests earthing a motor casing. There is no disclosure of earthing the casing by fastening the motor to the functional device as recited in claim 4; the structure that the Examiner marked with reference numeral 100 is merely a support structure, and nothing in any of the cited references indicates that it has an earthing function, as previously noted. Thus, the final rejection of claim 4 under 35 U.S.C. 103(a) is improper and should be withdrawn.

C. Claims 6 and 7

Independent claim 6 recites a plurality of capacitors with at least one of the capacitors separately connecting each of the brushes to the casing to suppress noise. As noted above with respect to independent claim 1, Takiguchi does not disclose separately connecting each of the brushes to the casing with a capacitor. There is no motivation to modify Takiguchi with Lau because Takiguchi focuses on connecting only one capacitor to both brushes in the motor and because Lau does not even suggest connecting capacitors and brushes together. Further, as explained above, neither Takiguchi nor Lau disclose a grounded casing as recited in claim 7. Thus, the final rejection of claims 6 and 7 under 35 U.S.C. 103(a) is improper and should be withdrawn.

D. Claim 8

Claim 8 recites a casing that is grounded via connection to a vehicle functional device. As explained above, nothing in either Takiguchi or Lau even suggest grounding a casing at all. Figure 3 of Takiguchi simply shows a motor 1 mounted to an unlabelled support structure without even mentioning

the purpose of the support structure. Thus, the final rejection of claim 8 under 35 U.S.C. 103(a) is improper and should be withdrawn.

E. Claim 9

Claim 9 recites that each of the brushes is connected to a power supply with a supply lead forming a plurality of noise suppression circuits. As discussed above, the cited combination, and Lau in particular, does not suggest separately connecting each brush to a motor casing. Lau further does not disclose brushes that are also connected to the power supply to form a plurality of noise suppression circuits. The Examiner previously argued that this feature is shown in Figure 4 of Lau; however, Figure 4 does not show any brushes connected to a power supply with a supply lead. Instead, Figures 3 and 4 of Lau show a noise suppression device 40 that includes a non-conductive board 41 supporting a conductive layer 42 having a plurality of fingers 43. The capacitors 44 are soldered to the fingers 43. Thus, the final rejection of claim 9 under 35 U.S.C. 103(a) is improper and should be withdrawn.

F. Claim 10

Claim 10 is dependent from claim 9 and further recites a plurality of inductors, with at least one inductor being associated with each of the supply leads. Because the cited combination does not suggest separately connecting each brush to a motor casing and does not disclose connecting each of the brushes to the power supply with a supply lead to form a plurality of noise suppression circuits, it further does not disclose these features in combination with a plurality of inductors with at least one inductor being associated with each of the supply leads. Finally, for the reasons discussed above, there is no motivation or suggestion to modify Takiguchi with Lau. Thus, the final rejection of claim 10 under 35 U.S.C. 103(a) is improper and should be withdrawn.

2. The final rejection of claims 2 and 3 under 35 U.S.C. § 103(a) as being unpatentable over Takiguchi in view of Wille et al. ("Wille") is improper.

A. Claim 2

Claim 2 recites that the supply leads in the noise suppression system are associated with inductors. The Examiner failed to explain how the combination of Takiguchi and Wille suggests connecting the supply leads with wires and only focused on the ferrite core choke coils, which are not

recited in claim 2. Without any explanation of how the proposed combination renders claim 2 obvious, the final rejection fails to establish a prima facie case of obviousness with respect to claim 2. Thus, the final rejection of claim 2 under 35 U.S.C. 103(a) is improper and should be withdrawn.

B. Claim 3

With respect to claim 3, the Examiner admitted that Takiguchi and Lau does not disclose the supply leads and inductors, but asserted that it would have been obvious to incorporate the ferrite core choke coils shown in Wille to connect the brushes and the respective current bus bar. Appellant respectfully disagrees.

Adding Wille to the Takiguchi/Lau combination still does not suggest the claimed invention because Wille does not overcome the deficiencies noted above with respect to claim 6. Further, the Examiner has not indicated how the using the coils 120 to connect the brushes and the current bus bar 130, 132 in Wille have anything to do with the structure in Takiguchi. Nothing in Takiguchi indicates any motivation for incorporating the ferrite core choke coils of Wille, nor does Takiguchi show any structure that could be construed as analogous to the bus bar in Wille. Simply stating that the coils are "for the purpose of connecting the brushes and the current bus bar" is not enough because only Wille shows a current bus bar, not Takiguchi. Thus, the final rejection of claim 3 under 35 U.S.C. 103(a) is improper and should be withdrawn.

3. The final rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Takiguchi in view of Lau and further in view of Wille is improper.

Claim 11 depends on claim 9 and further recites that the supply leads are formed by ferrite-loaded wires. The Examiner admits that Takiguchi and Lau do not teach this feature and relies on Wille to teach this feature. Adding Wille to the Takiguchi/Lau combination still would not suggest the claimed invention because Wille does not overcome the deficiencies noted above with respect to claim 6. Further, the Examiner has not indicated how the using the coils 120 to connect the brushes and the current bus bar 130, 132 in Wille have anything to do with the structures in Takiguchi and Lau. Nothing in Takiguchi or Lau indicates any motivation for incorporating the ferrite core choke coils of Wille, nor does the combination of Takiguchi, Lau and Wille suggest forming the supply leads

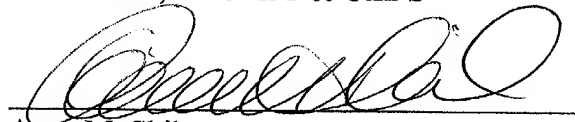
themselves from ferrite-loaded wires as claimed by Appellant. Thus, the final rejection of claim 11 under 35 U.S.C. 103(a) is improper and should be withdrawn.

CONCLUSION

For the reasons set forth above, the rejection of all claims is improper and should be withdrawn. Appellant earnestly requests such an action.

Respectfully submitted,

CARLSON, GASKEY & OLDS



Anna M. Shih

Attorneys for Appellant

Registration No. 36,372

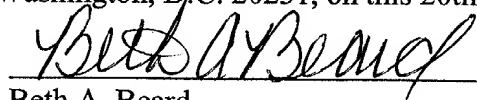
400 W. Maple Rd., Ste. 350

Birmingham, MI 48009

Dated: February 20, 2003

CERTIFICATE OF MAILING

I hereby certify that the attached Appeal Brief is being deposited in triplicate with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to Box AF, Assistant Commissioner of Patents, Washington, D.C. 20231, on this 20th day of February, 2003.



Beth A. Beard

APPENDIX A

1. Noise suppression system for a permanent-magnet motor for activating a functional device in a motor vehicle, in which the motor (1) includes supply brushes (8, 9) connected to an external power supply (12) by leads (10, 11) and a metal casing (2), characterized in that each brush (8, 9) is separately connected to the metal casing (2) of the motor (1) through at least one noise suppression capacitor (13, 14), in that the metal casing (2) of the motor (1) is connected to the vehicle's earth (at 15) and in that the metal casing (2) of the motor and the functional device have complementary means for earthing the casing.
2. System according to Claim 1, characterized in that the supply leads (10, 11) are associated with inductors (16, 17).
3. System according to Claim 1, characterized in that the supply leads (10, 11) are associated with inductors (16, 17) formed by ferrite-loaded wires.
4. System according to Claim 1, characterized in that the means for earthing the casing of the motor comprise means for fastening this motor to the functional device.
6. A noise suppression system for a motor comprising:
a casing;
a shaft rotatable relative to said casing having an output for activating a vehicle functional device;
a plurality of brushes supported by said shaft and connected to a power supply external to said casing; and
a plurality of capacitors with at least one of said capacitors separately connecting each of said brushes to said casing for suppressing noise.
7. A system according to claim 6 wherein said casing is grounded.

8. A system according to claim 7 wherein said casing is grounded via connection to said vehicle functional device.
9. A system according to claim 7 wherein each of said brushes is connected to said power supply with a supply lead forming a plurality of noise suppression circuits.
10. A system according to claim 9 including a plurality of inductors with at least one inductor being associated with each of said supply leads.
11. A system according to claim 9 wherein each of said supply leads are formed by ferrite-loaded wires.